What is claimed is:

1. A process for extractively removing nickel(0) complexes having phosphorus ligands and/or free phosphorus ligands from a reaction effluent of a hydrocyanation of unsaturated mononitriles to dinitriles by extraction by means of a hydrocarbon, a phase separation of the hydrocarbon and of the reaction effluent into two phases being effected at a temperature T (in °C),

wherein the content of nickel(0) complexes having phosphorus ligands and/or free phosphorus ligands in the reaction effluent of the hydrocyanation, depending on the temperature T, is at least y% by weight and, irrespective of the temperature T, is a maximum of 60% by weight, where the numerical value of the minimum content y is given by the equation

$$y = 0.5 \cdot T + 20$$

and T is to be used in the equation as a dimensionless numerical value.

2. The process according to claim 1, wherein the reaction effluent of the hydrocyanation is treated before or during the extraction with ammonia or a primary, secondary or tertiary aromatic or aliphatic amine.

3. The process according to claims 1 to 2, wherein the reaction effluent is treated with anhydrous ammonia.

4. The process according to claims 1 to 3, wherein the hydrocarbon used is cyclohexane, methylcyclohexane, n-heptane or n-octane.

5. The process according to claims 1 to 4, wherein the hydrocarbon used is n-heptane or n-octane.

6. The process according to claims 1 to 5, wherein the solids present in the reaction effluent are at least partly removed before the extraction.

7. The process according to claims 1 to 6, wherein the phase separation of the extraction is carried out at a temperature of from −15 to 120°C.

8. The process according to claims 1 to 7, wherein, in that region of the extraction in which the content of nickel(0) complexes having phosphorus ligands and/or free phosphorus ligands is higher than in the other region, the temperature is lower than in the other region.

9. The process according to claims 1 to 8, wherein the phosphorus ligand is selected selected from mono- or bidentate phosphines, phosphites, phosphinites and phosphonites.

10. The process according to claims 1 to 9, wherein the phosphorus ligand is selected from tritolyl phosphite, bidentate phosphorus chelate ligands, and phosphites of the formula Ib

$$P\ (O\text{-}R^1)_x\ (O\text{-}R^2)_y\ (O\text{-}R^3)_z\ (O\text{-}R^4)_p \qquad (I\ b)$$

where $R^1$, $R^2$ and $R^3$ are each independently selected from o-isopropylphenyl, m-tolyl and p-tolyl, $R^4$ is phenyl, x is 1 or 2, and y, z, p are each independently 0, 1 or 2, with the proviso that x+y+z+p = 3; and mixtures thereof.

11. The process according to claims 1 to 10, wherein the mononitrile is 3-pentenenitrile and the dinitrile is adiponitrile.

12. The process according to claims 1 to 11, wherein the reaction effluent is obtained by reacting 3-pentenenitrile with hydrogen cyanide in the presence of at least one nickel(0) complex having phosphorus ligands, if appropriate in the presence of at least one Lewis acid.